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ABSTRACT

The Outdoor Situational Fear Inventory (OSFI) has been used extensively to measure the social-, physical-, and environmental-based fears of participants in Outward Bound and in college outdoor education programs. The OSFI uses a continuum scaling method in which respondents place a slash mark on a 10-centimeter line representing a continuum from "not at all anxious" to "very anxious." The continuum-scaled OSFI presents several problems: labor-intensive measurements, artificial sense of precision, and difficulties in converting to verbal description. As an alternative, a certainty scaling method was developed in which respondents agree or disagree with a statement and then rate the strength of their opinion from 1 to 5. Responses are then converted to numerical values ranging from 1 to 10. Both forms of the OSFI were administered to 162 college students on the first day of 2-week outdoor adventure programs. Half of subjects completed the continuum version first, then the certainty-scaled OSFI; the other half did the opposite. With either scaling method, the OSFI and its social-fears and physical-fears subscales were reliable as measured by Cronbach's alpha. The order of administration had no effect on scores. The relationships of the two instruments' overall and subscale scores were strong. (SV)

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THE RELATIONSHIP OF CONTINUUM SCALING SCORES AND CERTAINTY SCALING SCORES ON THE OUTDOOR SITUATIONAL FEAR INVENTORY

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THE RELATIONSHIP OF CONTINUUM SCALING SCORES AND CERTAINTY SCALING SCORES ON THE OUTDOOR SITUATIONAL FEAR INVENTORY

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This study examined the reliability and relationship of two methods of scaling the Outdoor Situational Fear Inventory—continuum scaling and the more easily scored certainty method of scaling. With either scaling method, the OSFI and its subscales were reliable as measured by Cronbach's alpha. The relationships of the two instruments' overall and subscale scores were strong.

KEY WORDS: *anxiety, situational fear, outdoor education, adventure education*

Introduction

Whether using fear to stimulate learning or using instruction to reduce fears, most outdoor pursuits educators are familiar with the positive and negative impacts of students' fears. With this in mind, and drawing from the literature of other disciplines, Ewert (1988, 1989a) developed an outdoor situational fear inventory (OSFI) to measure and describe the social-based fears and physical- or environment-based fears of outdoor pursuits participants. After extensive use in studies with Outward Bound students and with input from researchers, outdoor instructors, and psychologists, the OSFI was revised for use in new studies of students in a college-sponsored outdoor education practicum (Ewert & Young, 1992; Young & Ewert, 1992).

Having an overall reliability, as measured by Cronbach's alpha, of .94 (Ewert, 1986), the OSFI and its associated research have been useful contributions to the work of researchers and practitioners alike. Nevertheless, important concerns and suggestions regarding its scaling have been expressed. The OSFI uses a "continuum scaling" method. Along a 10 centimeter line, anchored by the statements "not at all anxious" and "very anxious," subjects are to place a slash mark "at the point that best represents [their] level of concern for each item.". Responses to each item on the instrument are literally measured, using a ruler. A portion of the OSFI is illustrated in Figure 1.

The continuum scaled OSFI poses several difficulties. First, the continuum scaling is labor-intensive to measure. Thirty-three ruler measurements are made on each instrument. Second, continuum scaling scores may create an artificial sense of precision. For example, if a respondent felt an identical level of fear about "being hurt or injured" (item 1) and "falling/slipping" (item 11), the respondent is unlikely to draw the slash mark at exactly the same point on the continuum. OSFI item scores may range from 0 to 100, but some variations in scores may reflect respondents' imprecise markings more than the instrument's measurement sensitivity. Third, and most troublesome, OSFI continuum scores are difficult to describe. At what point along the continuum between "not at all anxious" and "very anxious" do students' levels of fear become noteworthy? In previous research, rarely have any mean OSFI items scores been above 50. Somewhat arbitrarily, Young and Ewert (1992) have regarded scores over 40 as "elevated."

These difficulties led to a search for an easily scored, more descriptive alternative to the OSFI's continuum scaling system. If possible, the alternative should preserve the interval character of the continuum scale's data. The most promising alternative ap-

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Directions: All of us experience different types of anxieties in the outdoor environment. Place a slash (/) on each line at the point that best represents your level of concern for each item. There are no right or wrong answers. Consider the following example:

LIGHTNING _____ NOT AT ALL ANXIOUS —————— VERY ANXIOUS

	NOT AT ALL ANXIOUS	VERY ANXIOUS
BEING HURT OR INJURED		
UNABLE TO CONTROL PHYSICAL ENVIRONMENT		
UNABLE TO CONTROL SOCIAL ENVIRONMENT		
EXPOSURE TO UNEXPECTED SITUATIONS		
MAKING WRONG DECISIONS		
LETTING MYSELF DOWN		
LETTING OTHERS DOWN		
TASK TOO DEMANDING		
NOT HAVING ENOUGH PHYSICAL STRENGTH		
NOT HAVING ENOUGH PERSONAL ABILITY		
FALLING/SLIPPING		

Figure 1. Excerpt from the continuum scaled OSFI. (Not to scale.)

peared to be the certainty scaling method developed by Warren, Klonglan, and Sabri (1969). As seen in Figure 2, this method requires subjects to make two decisions. First, subjects indicate whether they agree or disagree with a statement (e.g., "I am anxious or fearful about lightning") by circling the "A" or the "D" on the instrument. Second, subjects circle a number between 1 and 5 to indicate the strength of their agreement or disagreement. Numerical values ranging from 1 to 10 are then assigned to the responses (D5 = 1; A5 = 10).

I am fearful or anxious about...

Lightning A / D 1 2 3 4 5

Figure 2. Sample OSFI item using certainty scaling.

The primary purpose of this exploratory study was to determine the relationship of continuum scaling scores and certainty scaling scores on the situational fear inventory. Because only the scaling and not the items themselves differed, it was hypothesized that the scores would be related. If strongly related, the more descriptive certainty scaling might be further examined as a promising alternative for future related research. Addressing the primary purpose required answers to two other questions: (1) Is a certainty scaled OSFI reliable? and (2) Are scores on one version of the OSFI affected by prior exposure to the other version? Answering these underlying questions formed a secondary purpose of the study.

Review of the Literature

Fearful situations, both real and imagined, are strongly associated with being in wilderness and other primitive outdoor settings. In western culture, fear and revulsion about wilderness predominated from ancient times through most of the nineteenth century. Nash (1982) points out that even among wilderness devotees of recent times, ambivalence and anxiety recur. Leaders and sponsors of outdoor and adventure programs are well aware of the dynamics of fear among participants. Many programs attempt

to build participants' self-confidence as students successfully face a series of physical and social, anxiety inducing challenges (Hendee & Brown, 1988). Ewert (1989b) notes that because risk and fear are fundamentally part of all human experience, they are also part of all outdoor experiences. He adds, however, that outdoor leaders must anticipate students' fears, because "if ignored and permitted to reach dangerous levels, they can have a kind of paralyzing effect that is counterproductive from a teaching and learning perspective" (p. 44). Ironically, prior to the aforementioned studies by Ewert (1986, 1988) and Ewert and Young (1992), little was done to identify and describe the fears of outdoor program participants.

Fear and its Measurement

Fear is generally seen as a range of feelings from mild apprehension to panic that are associated with perceived threats, which are sometimes specific and tangible and other times elusive and indiscernible (Hauck, 1975; Leary, 1983). While some fears are instinctual or reflexive (e.g., a sudden clap of thunder), others are learned (e.g., not meeting group expectations) (Schacter & Singer, 1962; Rachman, 1974; Ewert, 1988). People have been found to have a dispositional level fear called "trait anxiety," which is resistant to change (Spielberger, 1966). In contrast, "state anxiety" refers to fears arising in response to specific events and contexts (Zuckerman, 1976).

A variety of instruments that measure anxiety are described in the psychological literature. Most of these instruments rely on direct observations of subjects, physiological responses, or self-report questionnaires. Noting an imperfect relationship among systems of measurement, Rachman (1978) suggests avoiding reliance upon a single measure. Still, Rachman (1978) argues that self-reported indices of perceived fear provide a practical method of making preliminary estimations of subjects' fears. He states that "...self reporting of fear is indispensable and at the same time potentially misleading" (p. 23). Because research on situational fears of outdoor program participants is in its infancy, single instrument studies are necessary until various forms of measurement are developed, refined, and validated.

Certainty Scaling

As mentioned in the introduction, the purpose of this study was to assess a refinement of the Outdoor Situational Fear Inventory (OSFI). Specifically, that refinement was the substitution of certainty scaling for the original continuum scale that ranged from poles of "not at all anxious" to "very anxious" (see Figures 1 and 2).

The certainty method of scaling was developed by Warren, Klonglan, and Sabri (1969) in an attempt to reduce measurement errors in sociological re search. The researchers conducted a study comparing and contrasting conventional types of Likert scaling with certainty scaling formats similar to that depicted in Figure 2. The certainty method was deemed reliable and favored because it achieved the measurement sensitivity of an eleven point Likert scale in a format subjects and researchers preferred.

Although the original certainty method incorporated a neutral or undecided response option, instructions in this study called for a forced-choice because of the nature of the anxiety construct. Leovinger (1977) reports that people are rarely devoid of an attitude. Given the personal nature of fears and anxieties, it was believed that providing a neutral response option would too often furnish subjects with an opportunity to choose a "safe" or socially acceptable response when they did, in fact, have a directional feeling, however slight, about the items.

Method

Subjects in this study were 162 college students similar to those involved in earlier outdoor fear research. Over an entire season of two-week outdoor/adventure programs, participants were administered both the continuum and certainty versions of the OSFI on the day their outdoor program began. To control for sequence effects, subjects were randomly assigned to two groups and testing rooms. Group 1 completed the continuum version first, then the certainty-scaled OSFI. Group 2 did the opposite. These arrangements permitted a true (post-test only control group) experiment to determine if prior

TABLE 1

Reliability (Cronbach's alpha) of Instruments and Subscales

OSFI Version	Social Fears Subscale	Physical Fears Subscale	Overall
Continuum Scaled	.91	.93	.95
Certainty Scaled	.89	.92	.93

exposure to one form affected scores on the second form.

Scores from both versions of the OSFI were handled in both conventional and novel ways. Conventionally, users of the OSFI have presented findings, item-by-item or item-by-item in two categories—(a) social-based fears and (b) physical or environment-based fears. New in this study was the calculation of a total score (sum of all items) and subscale scores that sum the social-based items and the physical-based items respectively. This use of subscales, combined with the use of a certainty scaled OSFI, suggested the need for reliability studies of both instruments. Because subscales and overall scale scores are summative, they can be calculated only for records with no missing data for any of the associated variables. For this reason, in several analyses described below, the Ns reported in the tables are less than the total of subjects in the study (N=162).

After double checking for accuracy, data were analyzed using SPSS-PC+, version 4.1. To assess the reliability of both forms of the OSFI and its subscales, Cronbach's alpha was calculated. To test for sequencing effects, a t-test for independent groups was used. Pearson's *r* was selected to determine the relationship between continuum form and certainty form scores.

Results

As reflected in Table 1, both subscales of both versions of the OSFI had acceptable levels of reliability as measured by Cronbach's alpha ($p \geq .8$).

To test for the effects of the order in which versions of the OSFI were completed, independent t-tests were calculated for the total scores, subscale scores, and item scores of each version of each instrument. As reflected in Table 2, the completing of one instrument before the other had no effect on the total or subscale scores of the continuum version of the OSFI. Similar results were found when the analysis was repeated on scores from the certainty version of the instrument.

The last set of statistical procedures examined the relationship of continuum scaling scores and certainty scaling scores on the OSFI. Pairwise correlations (Pearson's *r*) for the overall OSFI scores and the social-and physical-based subscores were calculated. As indicated in Table 3, strong relationships were found for all three comparisons. Item-by-item correlations ranged from .394 to .782 and were all significant at the .001 level.

Conclusions

This study examined the reliability of the Outdoor Situational Fear Inventory when a certainty method of scaling is substituted for the original continuum scaling method. It also examined the relationship of scores yielded by one form with those of the other. The certainty scaled version of the OSFI was found to be reliable and strongly correlated with the continuum version.

The findings raise a number of possibilities and suggestions. First, the certainty scaled OSFI appears to be a viable alternative to the continuum scaled version. It may be chosen by those who find its easier scoring and more verbally descriptive data appealing. Second, although the division of the OSFI into social-based and physical-based fear subscales is workable and reliable, other subscaling options may be possible and more useful. A factor analysis would be a

TABLE 2

Effects of Order in which Instruments were Completed on Continuum OSFI Scores

Order of Testing	N	Mean	S.D.	*t*	DF	*p*
		Overall Situational Fear Scores				
Took Continuum SFI First	73	821.7	371.62			
				.21	134	.832
Took Certainty SFI First	63	808.2	68.98			
		Social-Based Situational Fear Scores				
Took Continuum SFI First	73	389.5	194.31			
				.39	139	.695
Took Certainty SFI First	68	376.9	83.94			
		Physical/Program-Based Situational Fear Scores				
Took Continuum SFI First	73	432.2	216.10			
				.16	136	.871
Took Certainty SFI First	65	426.0	28.99			

TABLE 3

Relationship of Continuum and Certainty OSFI Scores

OSFI Scale/Subscale	N	*r*	*p*
Overall Scores	150	.767	<.001
Social-Based Scores	156	.706	<.001
Physical-Based Scores	155	.796	<.001

useful next step in research with this instrument. Third, these data and the relationship between the instruments permit a re-examination of earlier studies using the OSFI. With this data set, by using the certainty-scaled data to form groups for each item of those fearing and not fearing the item, researchers could compare the distributions of continuum scaled scores for each item. In doing so, it may be possible to identify the ranges of continuum scaled scores that represent those who are fearful of the various items.

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